

COMBAT FOCUS

ISSUE TWO

SPRING 2000

From The Top



Brig. Gen. Douglas J. Richardson
Commander, 53d Wing

Welcome to the spring edition of the Combat Focus Newsletter. A lot has happened in the 53d Wing since our last issue.

In March, we held the first-ever Senior Leaders Electronic Warfare Course, where we trained more than 20 wing commanders and Joint Force Air Component commanders to effectively employ electronic warfare in combat.

Our high ops tempo included validation of new 50T5 software in the Block 50 F-16. This will enable AEF 8 to deploy in June with the extended weapon range capabilities the Chief of Staff of the Air Force feels is needed in theater.

As always, the 53d Wing has been hard at work testing and evaluating new and fielded weapons systems, aircraft systems, and support equipment to ensure air dominance is executed with precision, minimal collateral damage, and a high level of intensity. It's our commitment to excellence and attention to detail that allows the Combat Air Forces to fly, fight, and win.

As we forge ahead into the 21st century, it is

imperative that we continue to lean forward into the future with new technologies and tactics designed to ensure we win the next air war with a score of one hundred... and Fifty-Three... to zero.

This summer, I hand over the reigns of command to Col. John J. Catton, Jr. I know that he'll be as interested in the great things the 53d is doing to improve the USAF's combat capability as I have been! I also know Jack and Jan are interested in meeting each member of our team and getting out into this great community to fully enjoy life in Florida!

I thank each and every one of the 53d team for what they do for our country – I have seen nothing but total commitment and enthusiasm... total dedication and service to one another! Thank you for your great support to me also! It's been great being the commander of the 53d!

One Team..One Fight..One Mission! 

53D Wing Operationally Tests Strike Capability

By Capt. Craig Heighton
53d Wing Public Affairs

EGLIN AIR FORCE BASE, Fla. — The 53d Wing recently wrapped up its operational testing of a new software upgrade for the Block 50 F-16 necessary to employ the Joint Stand Off Weapon missile, as well as the High Speed Anti-Radiation Missile, or HARM, Targeting System.

The program manager from the 28th Test Squadron, Maj. John "Bama" Montgomery, worked around the clock with the 422d Test and Evaluation Squadron at Nellis Air Force Base, Nev., and the 85th Test and Evaluation Squadron and 46th Test Wing maintenance here to make the test happen ahead of schedule.

The time line as moved up to give F-16s from Shaw Air Force Base, S.C., deploying on the next Aerospace Expeditionary Force in June, the extended range and precision strike capability senior Air Force officials feel is necessary for them to do their job.

The software, called 50T5, allows the F-16 to properly "talk" to the missile, much like

Windows talks to a home computer, said Montgomery. Until now, the 50T5 software has only been developmentally tested.

"Our job was to not only bring the combination of software and missile together in a realistic combat scenario, but all the supporting assets that go into testing for the 50T5 and JSOW combination to prove itself," said Montgomery. "Preliminary data from our series of tests show that we can give the Air Force 'the green light'



USAF Photo by SSgt. Matt Simpson

to field 50T5 and JSOW before the next AEF deployment."

The test, which took place over the Nevada and Utah deserts, took approximately two weeks to complete.

"We originally planned on completing this test around early July," said Montgomery. "But it took a real team effort by a lot of different agencies to make this test a success in the amount of time given to us."

That team effort was put to the test when one of the aircraft computers reported a missile error to the pilot the Friday afternoon before Monday morning's JSOW launch.

"The missile has its own inertial measurement unit that apparently broke at some time during this deployment (to Nellis)," said Craig Francks, Joint Program Office test coordinator.

To make matters worse, there was no repair in the field for this type of problem.

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Senior Leaders EW Course

The moderator of the executive course was Col. Charley Allan, 53d Electronic Warfare Group commander. He discussed the most current and accurate information available about the issues, problems and concerns of the EW community. Information briefings to the senior leaders included material on surface-to-air missile threats, information operations, Suppression of Enemy Air Defenses, and the Centralized Aircraft Survivability Assessment System. Experts from the Space Warfare Center, 343rd Reconnaissance Squadron (Rivet Joint), 16th Airborne Command and Control Squadron (JSTARS), and 552nd Air Control Wing (AWACS) provided attendees with current information on electronic warfare platforms. In all, 27 briefings and discussions were included in the two-day event. At the conclusion of the course, General Richardson initiated action to have the event conducted twice annually so that it would be available to all senior leaders who wished to attend.

New EWG Detachment

The 53d Electronic Warfare Group will stand up a new detachment at Nellis Air Force Base, Nev., in July. Detachment 1, 53 EWG, will conduct foreign materiel exploitations, Combat Shield evaluations of aircraft participating in Red Flag exercises, and operational testing of the F-22 Raptor's defensive avionics systems. The FME mission involves testing Combat Air Forces' electronic warfare systems against foreign threat radars in an operationally realistic environment. Combat Shield is the new name for the Electronic Warfare Assessment Program, where CAF EW systems are exhaustively evaluated both on the flightline and in the air with specially configured test equipment. Operational testing for the F-22 Raptor will phase in over the next three years as the U.S. Air Force's newest fighter is prepared for its initial operational capability.


Col. Charley Allan, 53 EWG commander, first identified the need for a detachment at Nellis. The three squadrons in the 53 EWG currently spend hundreds of man-days each year TDY to Nellis to conduct testing on the Nevada Test and Training Range and perform Combat Shield evaluations in conjunction with Red Flag. Establishing the detachment will save tens of thousands of dollars annually in travel costs and help to alleviate the TDY strain on the squadrons. The new detachment will also provide for enhanced coordination between the EWG at Eglin, the NTTR, the 53d Test and Evaluation Group, and the F-22 combined test force at Edwards

CASAS

The 1998 CSAF-directed Electronic Warfare Operational Shortfall Study identified the requirement for decision-makers to easily access information on the capabilities and shortfalls of EW systems against worldwide threats. The 53d Electronic Warfare Group developed the Centralized Aircraft Survivability Assessment System to fulfill this requirement. CASAS provides the warfighter with a single, certified source to access the status of EW systems in relation to aircraft survivability, force protection, and platform versus regional capabilities. CASAS is a living system with a web page user interface based on a classified (SECRET/NOFORN) Microsoft Access database. It's accessible via SIPRNET (INTELINK-S) at: www.wg53.eplin.af.smil.mil/casas. Commanders, aircrews, mission planners, and intelligence can use the CASAS software database to assess aircraft EW system capabilities against an existing threat environment.



CASAS, shown here in an unclassified version, enables the warfighter to depict the status of his electronic warfare systems against enemy air defense threats. It can be accessed through the SIPRNET (INTELINK-S) at: www.wg53.eglin.af.smil.mil/casas.

CASAS also flags EW shortfalls to Air Force leadership. Commanders and aircrews can use CASAS prior to a contingency deployment to view the threat and determine exactly what EW systems and capabilities are needed to enhance the survivability and combat effectiveness of the warfighter. Acquisition professionals and civilian leadership can use CASAS to help programming decisions. It can also be used to enhance unit intelligence training programs. As aircrews study threat information, CASAS data can help them better understand the best countermeasures to use against a given threat. Users can also access a variety of other information including EW system information, current operational flight program and mission data revision, engineer contact information, Electronic and Defensive Missile Order-of-Battle data, tactics manuals, threat information, and links to off-site information. CASAS is updated with every EW system change. 

Priority Focus



53d Test and Evaluation Group

Night Vision Goggles

The F-117 Dragon Test Team at Detachment 1, 53d Test and Evaluation Group, Holloman Air Force Base, N.M., recently completed an operational utility assessment of Night Vision Goggles. Both standard NVIS 4949 and developmental panoramic goggles were evaluated in typical F-117 missions flown from Holloman, as well as during Red Flag 00 exercises and JEFX experiments at deployed locations. Cockpit modifications included a battery powered Light Emitting Diode harness used to illuminate specific instrument panels, and filters over lit aircraft instruments to eliminate incompatible light.



Though test results are not yet published, the assessment showed that NVGs contribute favorably to F-117 night operations, significantly enhancing situational awareness and safety. Typical tasks such as tanker operations, weather avoidance, target and waypoint recognition, airborne object tracking, tactical navigation, and flight formations, all benefited from NVG use. The major contribution is greatly improved overall situational awareness. Completion of this test is the first step towards NVG incorporation into the F-117 operational fleet.

Data Link

Combat missions during Operations Allied Force, Desert Strike, and Desert Fox highlighted the need for improved situational awareness in U.S. Air Force combat aircraft. The 53d Test and Evaluation Group is spearheading the development of data link systems into fighter and bomber aircraft that will give aircrew unprecedented access to real-time information and provide them the ability to adjust their mission to meet real time taskings and defeat threats. Two systems under testing are Fighter Data Link and Bomber Enhanced Tactical Interface.

FDL is the newest data link system going into the F-15C and F-15E aircraft. Large amounts of information can be passed from fighters to other fighters and C2 platforms (such as AWACS, JSTARS, etc.) that will greatly increase the aircrew's ability to survive and successfully complete the mission. F-15C testing is complete and will provide criteria for the purchase of the first two lots of FDL terminals. F-15E testing was completed in March.

The B-52 BETI system initiative builds on the combined, tactical awareness display experience of the 28th Test Squadron, 49th Test and Evaluation Squadron, Detachment 5 of the 57th Wing, and the Naval Air Warfare Center's Aircraft Division. Similar systems are currently fielded onboard the presidential helicopter fleet and the P-3 Orion. The BETI system consists of five independently operated, personal computer-based computer display screens, one mounted at each aircrew station. Using Falcon View mapping software and aircraft navigational inputs, these displays provide a moving map capability. Additionally, an ELINT radio will receive near real time threat updates. This threat information can be displayed and analyzed at each crew station. Air Combat Command has directed an Operational Utility Evaluation of the BETI system be conducted this summer. Currently, BETI is planning to participate in JEFX 2000 in September. While BETI represents a potential quantum leap in B-52 tactical awareness and capabilities, only operational testing will prove it.

Weapons Integration

The 31st Test and Evaluation Squadron has recently been involved in high visibility weapons integration efforts such as the B-1 Conventional Mission Upgrade Program and the B-52 Advanced Weapons Integration Program. The CMUP and AWIP targeted putting JDAM, WCMD, JSOW and JASSM on our bomber force. Early involvement resulted in identifying more than two-thirds of the total deficiencies reported in Block D, the latest phase of CMUP, and more than half of the most critical deficiencies (Cat I and II). It also spurred the B-1 Combined Test Force to use AFMSS far earlier than they had planned in Block D flight test. The results were the delivery of a usable software package concurrent with the Fast 7 aircraft deployment at Ellsworth Air Force Base, S.D.

While the B-52 has been a legacy program for the 31 TES, current aircrew involvement in the AWIP program is relatively recent. Specifically, the squadron's lone radar navigator was deeply involved in identifying and documenting the recent difficulties with the WCMD "hot spare processor crashes" and the JSOW "battery squib problem." Many times CTF involvement allows the 31 TES to make inputs early enough to make an impact — before the hardware or software design is locked down.

The 31 TES also identified the poor modeling of the JDAM LAR during the DT phase. This early detection enabled ACC to redirect the effort to produce a split LAR file (high and low altitude) providing split tables and an average of more than 80 percent match of weapon capability compared with about 30 percent with the original design. The 31 TES participated in every JDAM drop during DT, DT/OT, and IOT&E and identified early on the lack of situational awareness the crew faces during a JDAM release. Unfortunately, the problem remains unresolved although 31 TES personnel have spearheaded initiatives to improve the displays in subsequent software improvements and future upgrades.

Priority Focus



53d Weapons Evaluation Group

High, Fast Flyer

The Combat Archer program is designed to explore the total air-to-air weapons system performance in a wide spectrum of potential combat scenarios. One such scenario, which itself has many variations, is the subject of an ongoing evaluation through a Special Interest Profile designated as "High, Fast Flyer."

The "High, Fast Flyer" shot profile pits F-15 or F-16 fighter aircraft against a supersonic, remotely-piloted QF-4 Phantom drone, roaring in at high altitude over the Gulf Range Complex south of Tyndall Air Force Base, Fla. The drone presentation is designed to simulate real-world MiG border crossings, as faced by U.S. Air Force pilots in Operations Southern Watch and Northern Watch. The pilot must engage the target with one or more AIM-120 (AMRAAM) missiles carrying telemetry packs instead of live warheads, replaced by ammo troops of the 83rd Fighter Weapons Squadron. All vital parameters during missile carriage, flight and intercept are transmitted to the ground. These transmissions are recorded by remote ground sites, and by the E-9 aircraft composed of a composite crew of military and civilian contractor pilots of the 82nd Aerial Targets Squadron, with an 83 FWS telemetry operator and a King Aerospace sea surveillance radar operator. The shots are then analyzed by Combat Archer missile experts who are looking to explore the outer limits of achievable performance by this weapon system of the pilot/aircraft/AIM-120: man, missile, and machine.

Thus far, fourteen missiles have found their mark with successful intercepts of drones in "High, Fast Flyer" scenarios; four drones have met a fiery end, destroyed by direct hits from one or more AMRAAMs. Results will be briefed to the Air Combat Command commander and the Air Force Chief of Staff when testing is completed.

Multi-Service Target Control System

The Multi-Service Target Control System is a Secretary of Defense-directed, tri-service, Global Positioning System-based, target control system being developed as part of the overarching Test Range System of Systems. The MSTCS is designed to enable any of the three services to remotely operate a variety of land-based, sea-based, and airborne targets on any test range and, possibly, worldwide. In addition to MSTCS, the TRSOS includes development of GPS-based missile and participant position information as well as a GPS-base scoring solution. Development and integration are funded by the Central Test and Evaluation Investment Program.

MSTCS was projected to be fully integrated by second quarter of 2005, but due to control frequency interference, the three services began efforts to bring early success to the full-scale aerial target aspect of the program. Commercial and private users are increasingly utilizing the current target control frequency band, creating interference with target control, which

poses a potentially serious safety hazard to military and civilian personnel. MSTCS test team plans to change the operational frequency to a government-only frequency band as well as integrate GPS into the target control system by the end of fiscal year 2002.

Combat Hammer/JDAM

On Nov. 15-16, 1999, four B-1 aircraft from the 28th Bomb Wing at Ellsworth Air Force Base, S.D., took part in the first GBU-31 Joint Direct Attack Munition Air-to-Ground Weapon System Evaluation Program investigative firing. This also marked the first time B-1 aircraft participated in Air Combat Command's Combat Hammer program. The B-1s expended 11 JDAMs over the two-day period with outstanding success. These missions provided Combat Hammer personnel their first glimpse into the unique requirements for evaluating this lethal weapon system.



The November A/G WSEP investigative firing occurred prior to the JDAM weapon system's acquisition milestone III decision point, currently scheduled for sometime in 2000. For this reason, Combat Hammer was able to satisfy the JDAM Program Office's lot acceptance test objectives through its investigative firing program. By integrating resources and coordinating objectives, Combat Hammer and the JPO are able to realize tremendous cost savings for both programs. Combat Hammer provides an avenue for the JPO to assess JDAMs fresh from the production line on operational aircraft in Combat Hammer's realistic employment environment. In return, the JPO provides Combat Hammer telemetry instrumentation kits earmarked for lot acceptance testing.

Over the next three years, Combat Hammer has plans to evaluate the JDAM employment capability of six operational units with a variety of aircraft. They include B-1, B-2, B-52 and F-16 platforms expending a total of more than 160 JDAMs. The joint LAT/A/G WSEP efforts stand to save the Air Force \$11.5M over the next five years.

Combat Shield -- Protecting the Fighter Pilot

By Staff Sgt. Carole Steele
53d Wing Public Affairs

A combat pilot's best defense against being shot down by the enemy is electronic warfare systems. An EW system's best defense against failure is the 16th Electronic Warfare Squadron. Members of the 16 EWS, a subordinate unit of the 53d Wing, routinely check these systems within the U.S. Air Force's fleet of F-15, F-16, and A-10 aircraft through a program called Combat Shield.

Combat Shield is the evolution of the Electronic Warfare Aggressor Program that was run by the 53d Wing's 87th Electronic Warfare Aggressor Squadron from 1990 until the unit's deactivation in 1996. The program then became the responsibility of the 16 EWS.

"There were 130 people in the EWAS, but only six of those positions were transferred to our squadron," said Maj. Jerry Cummin, 16 EWS assistant operations officer. "We were just not able to continue what they did with our manpower. All we could do was visit the 10 active duty fighter wings once a year and only perform ground checks on their fighters."

With the new Air Expeditionary Force concept, the squadron realized it was going to have to increase its workload, as well as include air checks like the 87 EWAS had done. Then in 1999, the Air Staff mandated the air checks for the entire Combat Air Forces.

It was at this time that EWAP was changed to Combat Shield and the reason was threefold. It incorporates the new missions of supporting the AEF and expanding the program to include air checks. The new name is also an identifier with the other 53d Wing "combat" programs, Combat Archer and Combat Hammer.

Taking on more tasks with current manpower was a challenge for the new Combat Shield program. Each of the six "core" EWAP specialists now heads a team with 5-6 people pulled from other areas in the squadron. Teams A-E are each assigned to support an AEF. Team F supports Red

and Green Flag exercises.

The Combat Shield teams deploy and perform ground checks for about two weeks and then execute air checks for about three days. They check the aircraft's radar warning receiver and jamming systems on the flightline to ensure that it reads threats and responds correctly. Aircraft that pass the ground check are then sent into the air. The team tests the systems again with ground simulators that emit threats to the airborne aircraft. "When finished, we report to the wing commander the number of aircraft that are ready for combat from an EW standpoint," said Cummin.



MSgt. Richard Maskell, a member of the 16 EWS Combat Shield team, prepares to attach an antenna coupler, or "hat," over the transmit antenna of an F-16 at Cannon Air Force Base, N.M., on May 23.

Letting the commander know their unit's EW readiness is priority, but Combat Shield is also critical for combat pilots on the issue of confidence, said Cummin. "To many aircrews out in the field, EW is black magic. They're told to flip a switch and trust that it works," he said. "What we do is help build confidence in that system, that when the pilot goes into the target area, he knows it's going to work; he doesn't have to have blind faith."

The Combat Shield teams also support the Weapons System Evaluation Program at Tyndall Air Force Base, Fla. Between deployments, the team has to get the equipment back, downloaded, and ready to be shipped back out again. This is also the time when they

train new personnel.

"This has been a huge accomplishment for the 16 EWS," said Lt. Col. Lou Martucci, 16 EWS commander. "We took over this program with six people, began with ground checks and now perform air checks, and we have a process in place to support the AEF concept with no increase in funding or manpower, all while not reducing the capabilities of our primary mission. That is attributed to the ingenuity and professionalism of our very resourceful people."

(Continued from page 1)

"We chose to go ahead and replace the telemetry kit in that missile and put it into another missile that was operating correctly," said Francks. "I wasn't sure we were going to be able to fix the missile in enough time to meet Monday's mission. But fortunately for us, we had some dedicated people that were able to fix it over the weekend."

Charlie Roberts and Shawn Peters, both contractors from the Raytheon Corporation and part of the test team, drove more than 200 miles to Edwards Air Force Base, Calif., Saturday to pick up a missile stand necessary to complete the repair.

"The folks at Edwards were really accommodating," said Roberts. "And if it wasn't for the help of the munitions storage area here and numerous others who had to give up their time over the weekend, we couldn't have completed our mission."

According to Montgomery, it would have cost more than \$147,000 if the test had been delayed.

"Knowing that we all came together and got the job done, and all the hard work that was put into this, makes the success of this mission very rewarding," said Montgomery.

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